

**REMARKS**

Applicant thanks the Examiner for the indication of allowable subject matter in claims 2-5, 8, and 11-16 in the Office Action dated June 21, 2007. In response, claims 1-23 are pending. All claims remain as originally presented or as previously presented, with the exception of claim 17, which has been amended.

Presently, claims 1, 7, 9-14, 18 and 19 stand rejected, their inventions allegedly being anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 6,035,951 to Mercer et al. (“Mercer”). Further, the inventions of claims 1, 6, 7, 9-14 and 17-20 are allegedly anticipated under 35 U.S.C. § 102(e) by U.S. Patent Application Pub. No. 2002/0157870 to Bischel et al. (“Bischel”). Finally, claims 18-23 stand rejected, their inventions allegedly being anticipated under 35 U.S.C. § 102(b) by U.S. Patent Application Pub. No. 2001/0022238 to Houwelingen et al. (“Houwelingen”).

An “anticipation” rejection under Sections 102(b) and 102(e) requires “strict identity” between the prior art invention and the one set forth in the claim. *See Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (holding that an anticipating reference must describe all claimed aspects of the invention). The “mere possibility” that the claimed structure exists in the reference is inadequate to meet the “strict identity” requirement for a proper anticipation rejection. *See Continental Can Company USA v. Monsanto Company*, 948 F.2d 1264, 1269, 20 USPQ2d 1746 (Fed. Cir. 1991) (holding that anticipation “may not be established by probabilities or possibilities”). Thus, the references cited by the Examiner must expressly or inherently disclose the exact same invention, arranged precisely as required in the claims, in order for the rejections to be sustained.

First addressing the rejection of claims 1, 7, 10-14, 18 and 19 based on Mercer, citation is made to col. 16, lines 37-45, which allegedly teaches “a first sensor carried by the case” and “a transmitter for wirelessly transmitting the output signal to the receiver separate for [*sic* from] the case” (Office Action, p. 2, ¶2). Similarly, with reference to claims 11 and 13, the

Examiner cites to this same passage in contending that Mercer discloses “a first sensor positioned in the interior of the case for sensing and generating an output signal, a control separate from the case including a receiver and a transmitter for wireless transmitting the output signal to the receiver” (Office Action, p. 3). Turning to claims 18 and 19, the Examiner contends that Mercer teaches “the method of associating a first sensor with the drill head for sensing and generating an output signal, providing a receiver separate from the drill head for receiving the output signal.” *Id.*

Claims 1, 11, and 13 expressly require a “first sensor carried by the case for sensing and generating an output signal representative of a first parameter of the drilling operation,” as well as a transmitter for wirelessly transmitting this output signal to a receiver or controller. Contrary to the Examiner’s position, Mercer does not teach a sensor for measuring a first parameter of the drilling operation and generating an output signal in combination with a transmitter for transmitting the output signal to a receiver or controller. Rather, the measuring arrangement 170 discussed in the passage cited by the Examiner comprises a stationary ultrasonic transmitter 282 and an ultrasonic receiver 284 used to determine the distance between the receiver and the transmitter. The transmitter 282 is not a “sensor” for sensing anything, and ultrasonic wave 286 emitted from it is not an “output signal representative of a parameter of the drilling operation.” Furthermore, the receiver 284 for receiving the ultrasonic wave 286 cannot be considered the sensor of the claim, since its output signal is not “wirelessly transmitted” by a transmitter to any receiver. The same is true of temperature sensor 285. Accordingly, Mercer does not disclose or even remotely teach the exact same invention of claims 1, 11, or 13 and the anticipation rejections should be withdrawn.

Turning to claim 10, it recites as follows:

a position sensor for generating a position signal representative of a relative position of the drilling element, **wherein the position signal is transmitted to the receiver via the transmitter.**

(emphasis added). In contending this invention is anticipated, the Examiner states that

“Mercer discloses a position sensor for generating a position signal” (Office Action, p. 3, lines 2-3). Even if that is correct, this ignores the further requirement that the position signal generated is transmitted to a receiver with the transmitter, which according to claim 1 is for “for wirelessly transmitting the output signal” from a sensor different from the position sensor. Nowhere does Mercer disclose any transmitter for wirelessly transmitting both a position signal representative of a position of the drilling element and an output signal representative of a parameter of the drilling operation. Accordingly, this reference cannot possibly teach the exact same invention of claim 10, and withdrawal of the anticipation rejection is in order.

Method claim 18 reads on the steps of “associating a first sensor with the drill head for sensing and generating an output signal representative of a first parameter of the drilling operation,” and “providing a receiver separate from the drill head for receiving the output signal, wherein the sensor and receiver are not connected to each other by wires.” In other words, the sensor and receiver communicate wirelessly.

Again, Mercer discloses a receiver 284 for receiving an ultrasonic wave 286 output by transmitter 282. Receiver 284 cannot qualify as the receiver of claim 18, since it is not “separate from the drill head.” If receiver 284 instead qualifies as the “sensor” mentioned in the claim, then there is no “receiver separate from the drill head” for receiving an output signal representative of a first parameter of the drilling operation. Regardless of which interpretation is followed, the express terms of claim 18 are not met by Mercer with the strict identity required for a proper anticipation rejection.

Turning to claim 19, it requires the steps of “sensing and generating an output signal representative of a first parameter of the drilling operation,” and “wirelessly transmitting the output signal to a receiver separate from the drill head.” As noted above, the only wireless transmission described in the cited passage of Mercer is by the transmitter 282, which plainly does not transmit “an output signal representative of a first parameter of the drilling

operation.” Regardless, the transmitter 282 does not transmit anything to any receiver “separate from the drill head.” Accordingly, Mercer does not disclose the exact method of claim 19, either.

Turning to the Examiner’s anticipation rejection of claims 1, 6, 7, 9-14 and 17-20 based upon Bischel, this reference discloses a directional drilling machine 120 including an elongated track 122. A drive assembly 124 mounted on the track 122 rotates a drill string 22. Further, it discloses use of a plurality of proximity switches 230 and 232 mounted on the rotational drive assembly 124. These switches 230, 232 enable detection of the position of the drive assembly 124 along the track 122, and may be replaced with a “sensor that is capable of measuring movement of the gearbox, and constantly calculating the speed and position of the gearbox.” *See* ¶ 0064.

Nowhere does this passage describe any transmitter for wirelessly transmitting an output signal or any wireless transmitting step, as required by claims 1, 11, 13, and 19. Nor does it disclose the steps of “providing a receiver separate from the drill head” for receiving an output signal from a sensor, “wherein the sensor and receiver are not connected to each other by wires.” Accordingly, Bischel does not meet the claim terms with the requisite strict identity, and withdrawal of the rejections is therefore in order.

With respect to claim 17, it requires an “inductive proximity sensor.” Although the Examiner cites to paragraph 64 of Bischel as disclosing such, this passage merely describes using a sensor to detect the passing teeth on a gear, but does not mention an “inductive proximity sensor.” Accordingly, the express terms of claim 17 are not met.

In addition, claim 17 requires “a receiver for receiving information relating to the drilling operation” and “a transmitter for wirelessly transmitting the output signal to the receiver separate from the case.” The Examiner contends that Bischel discloses “a transmitter for wirelessly transmitting the output signal to the receiver separate from the case (paragraph 64)” (Office Action, bridging from p. 3 to p. 4). Contrary to the Examiner’s position,

nowhere in paragraph 64 (or elsewhere in Bischel) is a wireless transmitter or receiver disclosed. Indeed, Bischel does not even use the word “wireless” in the entire document, so it cannot possibly disclose the exact same invention being claimed. Accordingly, a *prima facie* case of anticipation is lacking with respect to the invention set forth in claim 17, and withdrawal of the rejection is in order.

Finally, the Examiner contends that claims 18-23 are anticipated by Houwelingen. Claim 18 reads on a method of remotely transmitting information regarding a drilling operation using a drill head, which includes the steps of associating a first sensor with the drill head for sensing and generating an output signal representative of a first parameter of the drilling operation and providing a receiver separate from the drill head for wirelessly receiving the output signal. Claim 19 covers a method of evaluating a drilling or roof bolting operation using a drill head, and recites the steps of sensing and generating an output signal representative of a first parameter of the drilling operation and wirelessly transmitting the output signal to a receiver separate from the drill head.

Houwelingen discloses an underground boring machine 200 including a thrust motor 202 to apply an axially directed force to a length of drill rod 204. The thrust motor 202 provides varying levels of controlled force when thrusting the rod 204 into the ground to create a bore and when pulling back on the drill string when extracting the rod 204 from the bore. The thrust motor 202 includes a rack and pinion drive system. The drive system is a gear arrangement, which includes a toothed bar 210 that meshes with a pinion 212.

In order to determine the unsupported rod length in the drive system, the movement of the pinion 212 is monitored by counting the gear teeth of the pinion 212 as it is rotated to move the bar 210. Each gear tooth of the rotating pinion 212 is counted by a counting module 214. The counting module 214 may be associated with a controller, which is programmable to receive signals from a sensor relating to the rotation of the pinion 212.

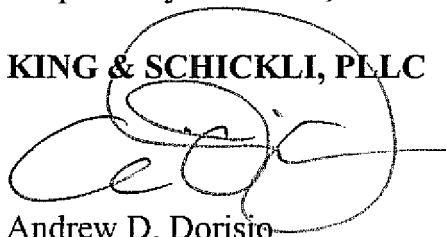
The Examiner points to paragraph 0105 as providing factual support for the contention

that Houwelingen “discloses the method of associating a first sensor with the drill head for sensing and generating an output signal, providing a receiver separate from the drill head for receiving the output signal” (Office Action, p. 5, ¶ 4). Contrary to the Examiner’s position, nowhere does this passage from Houwelingen even remotely mention the step of providing a receiver separate from the drill head for wirelessly receiving the output signal, as required by claims 18 and 19. Accordingly, Houwelingen does not qualify as the requisite substantial evidence necessary to support the Examiner’s finding that the exact same invention of these claims is found in the prior art. Accordingly, the rejections of independent claims 18, 19, and dependent claims 20-23 based on Houweilgen should be withdrawn.

In summary, it is now believed that all pending claims are allowable. If any issues remain, the Examiner is encouraged to contact the Applicant’s counsel at the telephone number listed below in order to reduce costs and expedite the prosecution of this patent application. Also, to the extent any fees are due for processing this response, the undersigned authorizes their deduction from Deposit Account 11-0978.

Respectfully submitted,

**KING & SCHICKLI, PLLC**

A handwritten signature in black ink, appearing to read 'Andrew D. Dorisio', is written over a circular stamp or seal.

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